

ARMY MEDICAL DEPARTMENT KNOWLEDGE MANAGEMENT

COL Robin J. Tefft

Introduction

The delivery of health care is increasingly complex, with emphasis on quality, availability, and accountability in an environment of fiscal constraint and expanding missions. The ability to capture, share, and reuse knowledge is one way to improve the efficiency and speed of decisionmaking in health care delivery. Clearly, harnessing health care knowledge is a strategic imperative that has the potential to maximize scarce resources and improve the quality of care.

Background

The Army Medical Department (AMEDD) has applied knowledge management (KM) principles since 1997 when the Center for Healthcare Education and Studies (CHES) at the Army Medical Department Center and School launched the first-generation Web-based KM initiative, the Knowledge Management Network (KMN). The KMN was a comprehensive project that incorporated the fundamental features of KM: a collaboration tool, a library, a process for certifying knowledge, and a database of subject matter experts (SMEs). In 2000, the CHES evolved into the next-generation KM initiative, the AMEDD Knowledge Exchange (KE), which harvested the best of the KMN and focused on AMEDD strategic initiatives. With this redesign came the understanding that KM is not an information management or information technology (IT) tool, but a strategic imperative in its own right.

AMEDD KM Vision

Knowledge management was initially driven by technology, but it became apparent that organizational culture and processes were the true focus. Consequently, the CHES proposes the following vision for AMEDD knowledge management: "The AMEDD of the future leverages knowledge as a

strategic resource through integrated knowledge management systems and a culture that embraces knowledge sharing." This vision addresses the nexus of people, process, and technology, the triad of enabling factors that drive an organization. Using KM to integrate and improve health care delivery processes will yield greater efficiency and quality, but only if the organizational culture is ready to contribute collaboratively. Change management must be integrated into the transition to a collaborative environment.

KM must be corporately driven and collectively embraced to succeed. The CHES proposes an enterprise-level, integrated approach by forming the AMEDD Knowledge Management Steering Committee, comprised of a cross section of AMEDD personnel, to determine the strategic priorities that can be enhanced by KM. A charter has been proposed for this committee to develop policy, establish priorities for KM investment, monitor resources, measure progress, and serve as a liaison to other KM entities internal and external to AMEDD.

The following imperatives are proposed for consideration of a corporate KM strategy:

- Transform AMEDD culture so that the identification, collection, storage, dissemination, and use of knowledge is a strategic priority and a universally shared value.
- Create the AMEDD Virtual Library that includes the universe of AMEDD content (traditional libraries, content providers, and the AMEDD Digital Library).
- Create the AMEDD Digital Library as a central repository for AMEDD knowledge products.
- Create an AMEDD taxonomy and a search-and-retrieval capability for all knowledge.

- Develop policy for standard system architecture to support e-business.
- Provide the capability for communities to create and share knowledge.
- Integrate health care information systems.
- Develop a single-user interface for KM.
- Provide multiple venues for knowledge sharing, such as local area networks, wireless devices, intranet, and Internet.
- Capture and share individual tacit knowledge.

AMEDD KM Renaissance

The next generation of KM recognizes the importance of focusing on the business of health care and the people who deliver and support it. The CHES knowledge services staff supports the AMEDD's strategic priorities using a three-tiered approach.

The fundamental tier is a self-service Web site (<http://ke.army.mil>) that provides AMEDD content. The second tier is the development and support of communities of practice (COPs). The third tier is customized Web-based programming to support AMEDD strategic initiatives. This three-tiered approach is adapted from *Three Approaches to Infrastructure*, a model developed by the American Productivity and Quality Center (APQC) (see <http://www.apqc.org>), a partner in developing KM for AMEDD. In addition to reformulating a conceptual framework for KM, the CHES redesigned the IT framework to improve efficiency, enhance flexibility, and save money.

AMEDD KE IT Infrastructure

The first-generation KM project was outsourced in its entirety and consisted of commercial products integrated into the Web site. Although this provided a high level of customization, it came at a price, both from the flexibility and fiscal viewpoints. The CHES concluded that

KM IT should be a core competency of the knowledge services staff. In the next-generation KM, staff and contract employees are integral to developing, deploying, and maintaining the Web site.

The system architecture is designed to provide continuous use with minimal downtime. This is accomplished using redundant servers in a secure server farm located at the Army Medical Department Center and School. The long-term goal is to house redundant servers in remote locations to minimize the impact of local network problems.

The backbone of the KE is a database. All data are stored as objects in a database, providing the capability to search and retrieve all data on the site. The data are delivered to the Web using PHP (hypertext preprocessor) programming.

Collaboration tools are custom-designed in hypertext markup language. The programming strategy is to provide basic tools needed by the user in applications and languages that are currently available in the AMEDD architecture. The programmers use applications that are available to most AMEDD users and avoid requiring users to download additional applications.

Self-Service

The self-service aspect is a new feature of AMEDD KE. The first-generation Web site was entirely password-protected and provided AMEDD users very little content. The requirement of a password to access information that did not need protection was the most prominent negative comment from users. The redesigned Web site provides unrestricted access to appropriate AMEDD knowledge, thereby facilitating knowledge sharing.

SMEs provide content using a custom templating process. Programmers meet with the SMEs to discuss their business process and create a template for the SMEs to enter information directly to the Web site. Often, the business process is streamlined as a result of these discussions. This creates a win-win situation: SMEs are empowered to publish information without requiring a webmaster, and AMEDD benefits by receiving information directly from the source quickly and accurately. The knowledge services staff maintains quality by granting access only to

authorized SMEs responsible for that particular subject.

Communities Of Practice

Knowledge sharing through collaboration is a hallmark of AMEDD KM. First-generation KM supported several successful COPs that were migrated to the new AMEDD Knowledge Exchange. Success stories from communities include reducing cycle time for curriculum development from 4 years to 3 months, improving patient care by sharing clinical practices, and providing justification for a single standard of education for accreditation of a graduate program. Two new COPs are being planned. The CHES is partnering with APQC to form a COP among deputy commanders for administration in AMEDD medical treatment facilities. The goal is to share best practices and solve common problems.

Another initiative is conceptual planning for the Warrior Knowledge Base. This COP effort is designed to allow both company-level units and soldiers training at combat training centers to develop an expert database. Ultimately, it will be transferred to soldiers stationed at fixed facilities.

Strategic Projects

The knowledge services staff supports AMEDD strategic projects by providing custom programming and assisting with process improvements. One of the goals of the Surgeon General's Reengineering and Quality Initiatives Working Group was to develop a process for sharing best practices across the AMEDD. The staff designed a custom application that allows best-practice entries to be submitted, reviewed and, if appropriate, posted for all to see. Another example is the development of a database-driven solution for personnel reporting in a medical battalion, which significantly reduced personnel time required to provide reports.

AMEDD Libraries

The ability to access AMEDD information easily and efficiently is a fundamental KM capability. The essential elements are the AMEDD Virtual Library, the AMEDD Digital Library, a taxonomy, and a search engine.

The AMEDD Virtual Library is the entirety of available knowledge products. This includes information from

traditional libraries, holdings that are purchased from content providers, and the contents of the AMEDD Digital Library.

AMEDD currently has no centralized system for archiving its unique knowledge products. The CHES is developing a pilot project for the AMEDD Digital Library in partnership with the Army Medical Research and Materiel Command (MRMC), AMEDD librarians, and functional experts. This library will be a central repository of knowledge products produced by the AMEDD, such as policies, briefings, information papers, and guidelines, and any products that are of corporate interest.

The development of an AMEDD-unique taxonomy is critical for search-and-retrieval capability. A taxonomy is a system of classification that groups content by subject headings, enabling more precise search and retrieval than a keyword search. The CHES, in partnership with MRMC, is researching the software and the process to develop a corporate taxonomy. Research on a search capability is targeted as a future initiative.

Conclusion

The goal of the Army Medical Department's KM effort is to allow sharing and reuse of AMEDD knowledge to improve health care. Realization of this goal is dependent on an enterprise approach to KM by formulating a clear vision and governance structure and determining priorities. It is imperative to develop an IT infrastructure, virtual repositories of AMEDD knowledge with robust search capability, and a culture that embraces knowledge sharing.

COL ROBIN J. TEFFT is the Chief, Leadership and Instructional Innovations Branch, Center for Healthcare Education and Studies, Army Medical Department Center and School, Fort Sam Houston, TX. She has a Doctor of Public Health degree in health promotion and education. Tefft can be reached at robin.tefft@us.army.mil.
